SHD COMPOSITE MATERIALS INC
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MTC510

Epoxy Component Prepreg

Introduction

MTC510 is an epoxy resin system designed to cure between 175°F and 250°F allowing flexibility in component manufacture. It is a toughened epoxy resin system designed for component manufacturing that can be supplied on a variety of fabrics and in UD format to meet your cost and manufacturing requirements.

Typical applications: *General purpose – Visual*

Key Features & Benefits

- Cure temperature from **175°F** to **250°F**
- Service temperature up to **250°F**
- Low CTE and shrinkage
- Work life at 70°F: **30 days**
- Storage life at 0°F: **12 months**
- Very low VOC content – no added solvents during manufacture
- Excellent surface finish

Storage & Out Life

This material should be kept frozen at 0°F. It must be kept sealed in a polythene bag which must not be opened until fully thawed to room temperature. If the material is not fully used, then the material must be resealed in the polythene bag to prevent moisture absorption.

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Cure Cycles & performances

CURE CYCLE OPTIONS:

Cure		Initial Min Cure		Tg
175°F	(minimum)	16	hours	195°F
195°F		8	hours	210°F
210°F		4	hours	230°F
250°F	(maximum)	1	hour	265°F

- Curing Schedule is meant to be a guide only and is subject to local conditions.
- To avoid exotherm particular care must be taken with thick laminates.
  Ramp rates must not exceed **5°F** per minute during **initial cure**.
  Ramp rates must not exceed **1°F** per minute during **post cure** (free standing).

- Typical Tg:

DMA – Dry Tg	250°F for 1hr	Tg E' Onset	**268**	**°F**	*Modified ASTM D7028*
		Tg Peak Tan δ	**298**	**°F**	*(Single Cantilever)*

*Tests performed on **MTC510-C415T-HS-12K-38%RW** laminates*

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Cured Material Properties

*Tests performed on **MTC510-C200T-HS-3K-42%RW** laminates* *(200gsm 2x2 twill, T300 3k carbon fabric)*

Test	Results			Standard
Vf	Fibre volume fraction	**49.41**	**%**	*BS EN ISO 14127 Method B*
CPT	Cured ply thickness	**0.237**	**mm**	*BS EN ISO 14127 Method B*
Tensile 0°	Tensile strength	**634**	**MPa**	*BS EN ISO 527-4*
	Tensile modulus	**55.7**	**GPa**	
	Poisson's ratio	**0.05**		
Tensile 90°	Tensile strength	**680**	**MPa**	
	Tensile modulus	**56.7**	**GPa**	
	Poisson's ratio	**0.05**		
Compressive 0°	Compressive strength	**683**	**MPa**	*prEN 2850 Type B*
	Compressive modulus	**51.0**	**GPa**	
Compressive 90°	Compressive strength	**691**	**MPa**	
	Compressive modulus	**52.6**	**GPa**	
Flexural 0°	Flexural strength	**946**	**MPa**	*BS EN ISO 14125*
	Flexural modulus	**56.7**	**GPa**	
Flexural 90°	Flexural strength	**885**	**MPa**	
	Flexural modulus	**53.2**	**GPa**	
In-Plane Shear ±45°	In-Plane shear strength (5% strain)	**65.3**	**MPa**	*BS EN ISO 14129*
	In-Plane shear strength (ultimate)	**115.0**	**MPa**	
	In-Plane shear modulus	**3.42**	**GPa**	
Interlaminar Shear 0°	Interlaminar shear strength	**71.1**	**MPa**	*BS EN ISO 14130*
Interlaminar Shear 90°	Interlaminar shear strength	**70.9**	**MPa**	
DMA – Dry Tg	Tg E' Onset	**260**	**°F**	*Modified ASTM D7028*
Initial cure	Tg Peak Tan δ	**279**	**°F**	*(Single Cantilever)*
DMA – Wet Tg	Tg E' Onset	**194**	**°F**	
14 days in water at 160°F	Tg Peak Tan δ	**212**	**°F**	

Mechanical testing carried out at 70°F±4°F. Initial cure: 15mins at 185°F followed by 1hr at 250°F, autoclave 6bar. All figures in this report are actual test results and have not been normalised. Testing was either completed by SHD Composites laboratories, or independently by UKAS approved organisations. Complete test reports can be supplied independently upon request.

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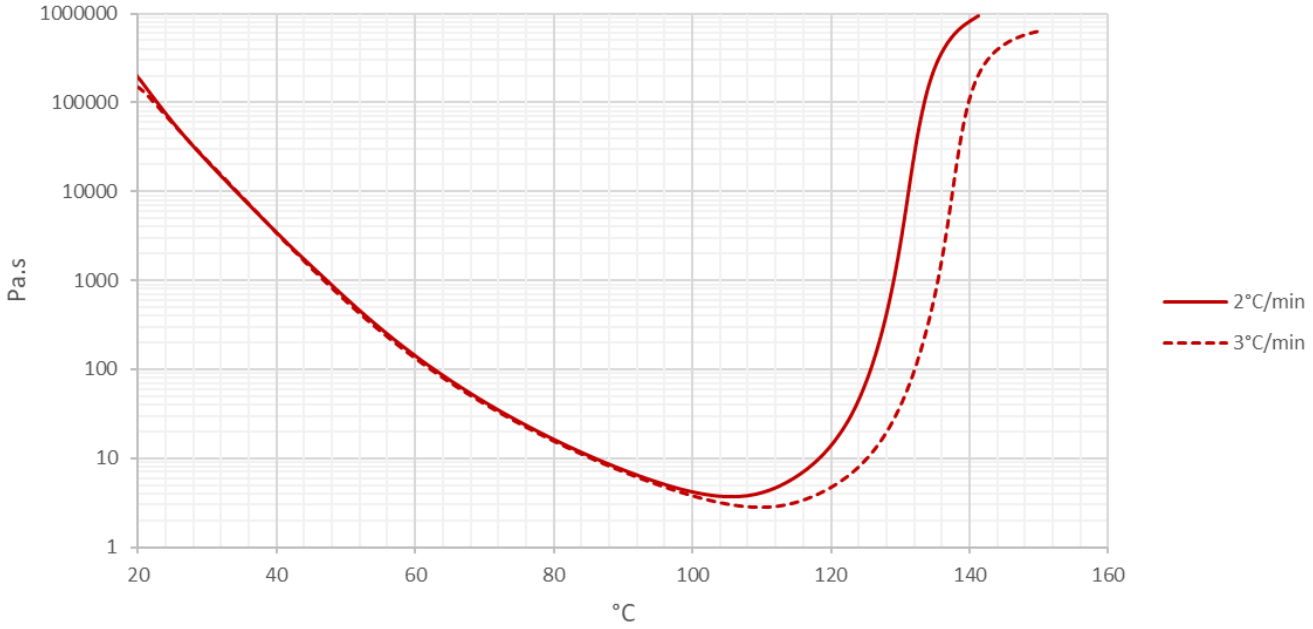
Viscosity Profile

Testing carried out using a rotational rheometer.



Health and Safety

This material contains epoxy resin which can cause allergic reactions with skin contact and must avoid repeated and prolonged skin contact.

Please refer to the product Safety Data Sheet before using this material. The following precautions must be taken when using epoxy resin prepregs:

- Overalls must be worn.
- Impervious gloves must be worn.
- Curing schedule is meant to be as a guide only and is subject to local conditions.
- To avoid exotherm, particular care must be taken with thick laminates.
- Ramp rates must not exceed 5°F/min during initial cure and 1°F/min during post cure.